



Impact

- **Security Bug Tolerance**
 - system survives *despite* vulnerabilities
- **Real Applicability**
 - enhance survivability of *existing* systems
 - *thousands* of users
- **Working Technologies**
 - **StackGuard**
 - protects programs from *stack smashing attack*, the most common form of attack
 - *without* having to fix the vulnerabilities
 - **SubDomain**
 - uses security information to *enhance* performance

New Ideas

- **Systematic System Diversification**
 - diversify interfaces and implementations
- **Redundant Security Checks**
 - restrict actions with Synthetix *quasi-invariants*
- **Adaptive Response to Attack**

- remove vulnerable, convenient services

Schedule

retain critical, hardened services

StackGuard

experiments

management

SubDomain

confinement kernel

prefetching security

protected system
multiple defenses
diversity

adaptive

morphing file system

program